

## CLAIMS

1. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system, the method comprising the steps of:

5 providing the WDM system with a plurality of channels which propagate in a bidirectional interleaved fashion and which have at least one frequency band between a first side and a second side;

directing all the data signals of the channels of a specific frequency band, coming from the first side and the second side, in a same direction via a single  
10 branch which is assigned to the frequency band and which has at least one influencing part; and

forwarding all the data signals to the first side and the second side in accordance with their original propagation direction.

15 2. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 1, the method further comprising the step of:

amplifying an intensity of the data signals of a frequency band via the at least one influencing part.  
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3. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 1, the method further comprising the step of:

compensating for dispersion of a frequency band via the at least one  
25 influencing part.

4. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 1, wherein the distribution of the data signals is carried out using at least  
30 one interleaver having at least four inputs/outputs.

5. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 4, the method further comprising the steps of:

transmitting the incoming data signals on two frequency bands;  
5 outputting, alternately, adjacent channels of a frequency band to different outputs via the interleaver;  
distributing the data signals which are conducted to the influencing part, as a function of the frequency band, between two branches; and  
combining the data signals at a passage through the influencing part.

6. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 4, wherein the distribution of the data signals between the branches is carried out using band filters.

7. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 4, wherein the distribution of the data signals which are conducted to the influencing part is carried out using circulators.

8. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 4, wherein the step of combining is carried out subsequent to the passage through the influencing part using at least one of band filters and interleavers.

9. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 4, wherein the step of combining is carried out subsequent to the passage through the influencing part using couplers.

10. A method for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 5, wherein C and L bands are used as first and second frequency bands.

5 11. An apparatus in an optical data transmission link for the frequency band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system having a plurality of channels which propagate in a bidirectional interleaved fashion and have at least one frequency band between a first side and a second side, comprising at least one branch having at least one  
10 influencing part provided per frequency band, precisely one interleaver, and precisely one interleaver, is provided, and precisely one branch, having at least one influencing part, provided per frequency band.

12. An apparatus in an optical data transmission link for the frequency  
15 band-dependent distribution and frequency-band dependent influencing of data signals of a WDM system as claimed in claim 11, wherein the at least one influencing part is a multi-stage amplifier.

13. An apparatus in an optical data transmission link for the frequency  
20 band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 12, wherein the amplifier contains at least one optical waveguide which is doped with erbium.

14. An apparatus in an optical data transmission link for the frequency  
25 band-dependent distribution and frequency band-dependent influencing of data signals of a WDM system as claimed in claim 11, wherein the at least one influencing part is a dispersion-compensating fiber.

15. An apparatus in an optical data transmission link for the frequency  
30 band-dependent distribution and frequency band-dependent influencing of data

signals of a WDM system as claimed in claim 11, wherein at least two frequency bands are provided.

16. An apparatus in an optical data transmission link for the frequency  
5 band-dependent distribution and frequency band-dependent influencing of data  
signals of a WDM system as claimed in claim 11, further comprising:  
an interleaver provided per frequency band; and  
at least one band filter for frequency band-dependent distribution of the data  
signals, provided upstream of the at least one interleaver;  
10 wherein the interleavers serve to align channels upstream and downstream  
of the at least one influencing part per frequency band.

17. An apparatus in an optical data transmission link for the frequency  
band-dependent distribution and frequency band-dependent influencing of data  
15 signals of a WDM system as claimed in claim 11, wherein precisely one interleaver  
is provided for two frequency bands, a part for the frequency band-dependent  
distribution of the data signals, which is one of at least one circulator and band  
filter, being provided downstream of the interleaver, and the interleaver serving to  
align the channels.